P-6.3562

# OBSERVATIONS OF THE 1963 EAST TEXAS SOUTHERN PINE BEETLE EPIDEMIC

## COVER SHEET


| Title | Page No. |
|---|---|
| INTRODUCTION | 1 |
| CALENDAR OF EVENTS | 2 |
| DETECTION | 3 |
| CONTROL | 4 |
| TIMBER KILLED (VOLUME) | 5 |
| SUMMARY | 6 |
| LITERATURE CITED | 7 |
| APPENDIX | 8 |

P-6.3562

# OBSERVATIONS OF THE 1963 EAST TEXAS SOUTHERN PINE BEETLE EPIDEMIC

By Leroy Williamson, Head, Forest Pest Control Section
Texas Forest Service

## INTRODUCTION

Since the initiation of a Southern Pine Beetle Control Project in 1958 to combat an epidemic of this insect, an annual summary of project activities has been prepared. This report supplements similar reports prepared annually during the epidemic to provide a record of highlights of events.

Scattered small infestations first discovered on approximately 200 acres in 1957 continued to appear over a larger area each year, until in 1962 the epidemic covered a gross area of 4,500,000 acres. In spite of control efforts by East Texas landowners, the U. S. Forest Service, and the Texas Forest Service there was seemingly no limit to the ravages of the Southern pine beetle. Then in mid-1963, the first sign of relief appeared in the form of a reduction in the gross area involved in the epidemic and an indication that the aggressiveness of the beetle was waning. During the year,Southern pine beetle infestations controlled to approximately 2,000,000 acres, a considerable reduction in gross area when compared to the 4,500,000 acres involved only one season earlier.

For the first time during this epidemic, infestations were found in Orange and Newton Counties and in the Kirbyville area of Jasper County. In general, spots did not become as large nor was the rate of infestation spread as great as in recent years of the current epidemic. By mid-June, 1,673 infestations, including single-tree spots, had been located compared to 2,200 multiple-tree infestations located during the same period in 1962. Total area of killed timber was only 610 acres compared to 25,000 acres during the previous year.

Landowners capitalized on the decrease in activity by undertaking concerted control operations early in the year. Enlargement of spots was curtailed by control of trees containing overwintering broods. The intensified control efforts, along with increase in populations of natural enemies, competition from other bark beetles and adverse environmental factors held the Southern pine beetle population at a low level. The beetle population, as in the past, began declining by July. No known infestations remained uncontrolled by December.

In the period January 1 to December 31, 1963 a total of $115,153.60 was reported to have been spent on control. This does not include expenditures from a few landowners who did not report to the Texas Forest Service or expenditures for Southern pine beetle control on national forests. A statement of expenditures by each landowner is given in the Appendix.

## CALENDAR OF EVENTS

January 1-25 - An operations recorder survey designed to evaluate trends in the Southern pine beetle population in East Texas was conducted by the Zone 3 office of the Forest Insect and Disease Control Branch of Region 8, U. S. Forest Service. Results indicated that approximately 2,100 Southern pine beetle brood trees existed on an area of 2,000,000 acres bounded by U. S. Highway 190, U. S. Highway 90, Neches River and Trinity River on the north, south, east and west, respectively. These were primarily single tree infestations.

February 15 - The Sub-Committee on Field Control of the parent Texas Forest Pest Committee agreed on a plan whereby large landowners would conduct aerial detection flights over their respective ownerships to locate brood trees for immediate control. The owners would also locate and control infestations adjacent to their ownership, with permission from the adjacent landowner.

March 8 - A progress report on a winter study of the Southern pine beetle by Thatcher and Williamson was submitted to members of the Texas Forest Pest Committee. Results showed "... that potentially dangerous populations remain unchecked in the problem area" and "Control efforts should be intensified immediately."

May 3 - The Sub-Committee on Field Control agreed to a plan involving participation in bi-weekly aerial detection flights over the epidemic area by several large landowners. The epidemic area was divided into sectors with W. T. Carter and Brother, Champion Papers Inc., International Paper Company, Kirby Lumber Corporation, Southland Paper Mills, Inc., Wirt Davis Estate, Southwestern Settlement and Development Company and the Texas Forest Service (Districts 4, 5 and 6) each assigned a sector for complete aerial coverage for detection of Southern pine beetle infestations. Information from these flights was used by the project coordinator, D. L. Williamson, in administering the control project. The purpose of the plan was to eliminate duplication of effort by the Texas Forest Service and landowners in the aerial detection phase of the project.

July 1 - A revised control plan for Southern pine beetle infestations became effective. The plan contained control recommendations of the Texas Forest Service and procedure to be followed by the agency until H. B. 597, Texas Forest Pest Law became effective.

July 25 - A biological evaluation was prepared jointly by D. L. Williamson, Texas Forest Service and D. E. Ketcham, Forest Insect and Disease Control Branch, U. S. Forest Service. Incorporated in the report was results of operations recorder surveys over the epidemic area to determine population trends. Results showed that from January to late June the number of Southern pine beetle brood trees had increased from approximately 2 trees per thousand acres to 8 trees per thousand acres. Recommendation was made to cooperating landowners that full-scale control operations be continued.

August 23 - The Texas Forest Pest Law became effective.

August 29 - The Texas Forest Pest Committee met and agreed to give full support to the Texas Forest Service should it be necessary to invoke the authority contained in the Forest Pest Control Act.

September 3-16 - Another operations recorder survey was conducted by the Zone 3, Forest Insect and Disease Control Branch, U. S. Forest Service. Results showed that the number of Southern pine beetle infested trees remained about the same as in June, approximately 8 trees/M acres. Fewer spots were found in September than June, but contained more trees per spot. All spots were subsequently controlled through the fine efforts of landowners with infestations and a Texas Forest Service control crew.

## DETECTION

No changes were made in the detection procedures previously employed. The use of Texas Forest Service grid block maps covered with drafting film to record spot locations during detection surveys from high-winged aircraft, primarily Cessna 172 and 182, was continued.

Systematic coverage of the 2,000,000 acre infestation area was accomplished by dividing the area into nine sectors with each assignee responsible for complete aerial coverage on a bi-weekly basis. The Pest Control Section head of the Texas Forest Service continued to serve as project coordinator, who in turn, notified the responsible landowners with infestations on a flash report form. Preparation of a letter following each detection flight to all forest landowners having Southern pine beetle infestations was continued; its purpose was to report observations and current status of the project.

### Aerial Observations

Each year a tabulation from Texas Forest Service records has shown the number of spots detected by flight date over the entire epidemic area, except during 1962 when specific zones of infestation were flown. The tabulation below summarizes detection for the entire epidemic area during the past year. It includes single tree infestations.

SPOTS DISCOVERED FROM AERIAL OBSERVATIONS, 1963

| Flight Date | Spots Observed | Flight Date | Spots Observed |
|---|---|---|---|
| February 7 | 5 | July 15 | 177 |
| March 21 | 0 | July 29 | 186 |
| April 24 | 75 | August 12 | 131 |
| May 6 | 315 | August 26 | 113 |
| May 20 | 350 | September 23 | 79 |
| June 3 | 328 | October 21 | 79 |
| June 17 | 296 | November 27 | 18 |
| July 1 | 127 | | |

The tabulation above shows total detection effort, i.e., the number of spots, that had to be ground checked to locate Southern pine beetle

infested trees. Of the total mortality observed, the percent active Southern pine beetle brood trees was comparatively small. During May through July, the percentage of active Southern pine beetle infestations found by ground checking following detection flights ranged between 20 to 30 percent. The remaining damage observed was caused primarily by Ips engraver beetles, black turpentine beetles and a few spots of Southern pine beetles which had become inactive. After July the percentage declined until only occasional active infestations were located; for example, of the 18 spots located on November 27, only one active brood tree was found and the infestation controlled. Prior to the last flight, all other spots had been ground checked and all known infestations controlled.

The tabulation of total number of spots detected by aerial flights and the size of the epidemic for each year of the project were presented in the 1961 and 1962 annual summary reports. These are shown again below with the addition of 1963 information.

| Year | Total Spots Detected on Flights | Estimated Acreage Involved |
|---|---|---|
| 1957 | Unknown | 200 |
| 1958 | 106 | 60,000 |
| 1959 | 108 | 200,000 |
| 1960 | 436 | 200,000 |
| 1961 | 943 | 600,000 |
| 1962 | 2200 | 4,500,000 |
| 1963 | 2279 | 2,000,000 |

## CONTROL

Several factors were observed to have had a favorable effect on the control of Southern pine beetles. The most significant item was the interest displayed by large landowners in undertaking operations early in the year and controlling many infestations before overwintering broods emerged and rate of spread increased. These efforts were also aided by the fact that all the infestation area remained accessible until hurricane Cindy occurred on September 12 but most of the year was an extended period of dry weather. This was a decided improvement over previous years of the epidemic, viz., 1959, 1960, and 1961; the chief reason for increased spread of infestations was attributed to areas being inaccessible to control, landowners failing to recognize the seriousness of the epidemic and failure to use sufficient manpower to control existing infestations immediately. Landowners began conducting aerial flights over their respective ownerships in February of 1963 in an effort to locate all infestations, including single tree spots. The flights were followed by prompt ground checking and control where necessary.

The direct effect of parasites, predators, competitors and climatic factors have never been precisely measured, although they were observed to have adversely affected the Southern pine beetle population increase. Heavy populations of parasites and predators were observed and thus were probably more effective than in previous years of the epidemic. Ips, woodborers, and other secondary insects decreased Southern pine beetle brood survival by successfully competing for available food and space within trees. Low temperatures during the winter slowed Southern pine beetle population development. From Bob Thatcher's work it was shown that during the first six months of 1963 only 2.5 generations of Southern pine beetles had developed compared to four complete generations during the same period in 1962. Reduced moisture content in the cambium of trees, caused by deficient rainfall during most of the year, apparently created adverse conditions for Southern pine beetle brood development.

Landowners were kept informed on the status of the Southern pine beetle situation through evaluation surveys and a biological evaluation. These reports included current information about the behavior of the beetle and recommendations for control. Assistance in performing the surveys and preparing reports was given by the U. S. Forest Service Forest Insect and Disease Control Brsnch, Zone 3, located in Alexandria, Louisiana. A cooperative project between it and the Texas Forest Service was also initiated in September to obtain information on Southern pine beetle population trends during the winter months of 1963-1964.

Chemical control recommendations were 2 gallons of 11% gamma isomer BHC in 50 gallons of diesel oil.

Project Personnel

With the decrease in size of the epidemic, the control force also decreased compared to last year. The size of control crews ranged from two to five men; the most common crew size was three men. The total number of people employed on the project was 185 which included aerial observers, supervisory and clerical personnel, ground checkers and salvage operations.

Volume of Timber Killed

The volume of timber killed in 1963 was less than any one of the previous three years of the epidemic. The tabulation below is compiled from landowner reports and Texas Forest Service records to show the volume of timber killed each year since 1958 and the total volume loss during the six year period.

TIMBER KILLED (VOLUME)

| | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | Total |
|---|---|---|---|---|---|---|---|
| Sawlogs (M Bd. Ft.) | 500 | 2,500 | 8,000 | 17,887 | 93,043 | 4,084 | 126,014 |
| Pulpwood (Cords) | -0 | 2,500 | 8,000 | 24,000 | 111,110 | 1,920 | 147,530 |

An estimated 32 percent of the infested pulpwood and 75 percent of the sawtimber was salvaged during 1963. Since 1958, all the timber on an estimated 45,070 acres has been killed by Southern pine beetles in East Texas. An estimated 610 acres was killed in 1963.

## SUMMARY

The size of the epidemic, expressed in number of new infestations, total area and volume of timber killed decreased for the first year since 1958 giving hope that the area stormed by Southern pine beetles would become more peaceful.

All known infestations were controlled, but there was some evidence of continued activity observed during the winter months. Conditions remained under careful observation with evaluation surveys and winter studies being conducted to obtain information on population trends. Landowners remained alert for signs of further damage by the insect and were encouraged to continue to do so. If brood trees are found, they should be controlled immediately.

DLW/DY/et

March 19, 1964
Attachments

## LITERATURE CITED


| | | |
|---|---|---|
| Williamson, D. L. | 1963 | Observations on the 1962 East Texas Southern Pine Beetle Epidemic. Unpublished report, Texas Forest Service, District #4, Woodville |
| Williamson, D. L. and Ketcham, D. E. | 1963 | Biological Evaluation of Southern Pine Beetle in Southeast Texas. USDA, Forest Service, R-8, Report No. 23-1-63 |

APPENDIX

Statement of Landowner Expenditures for the period January 1, 1963 through December 31, 1963

Area of Infestation, 1963

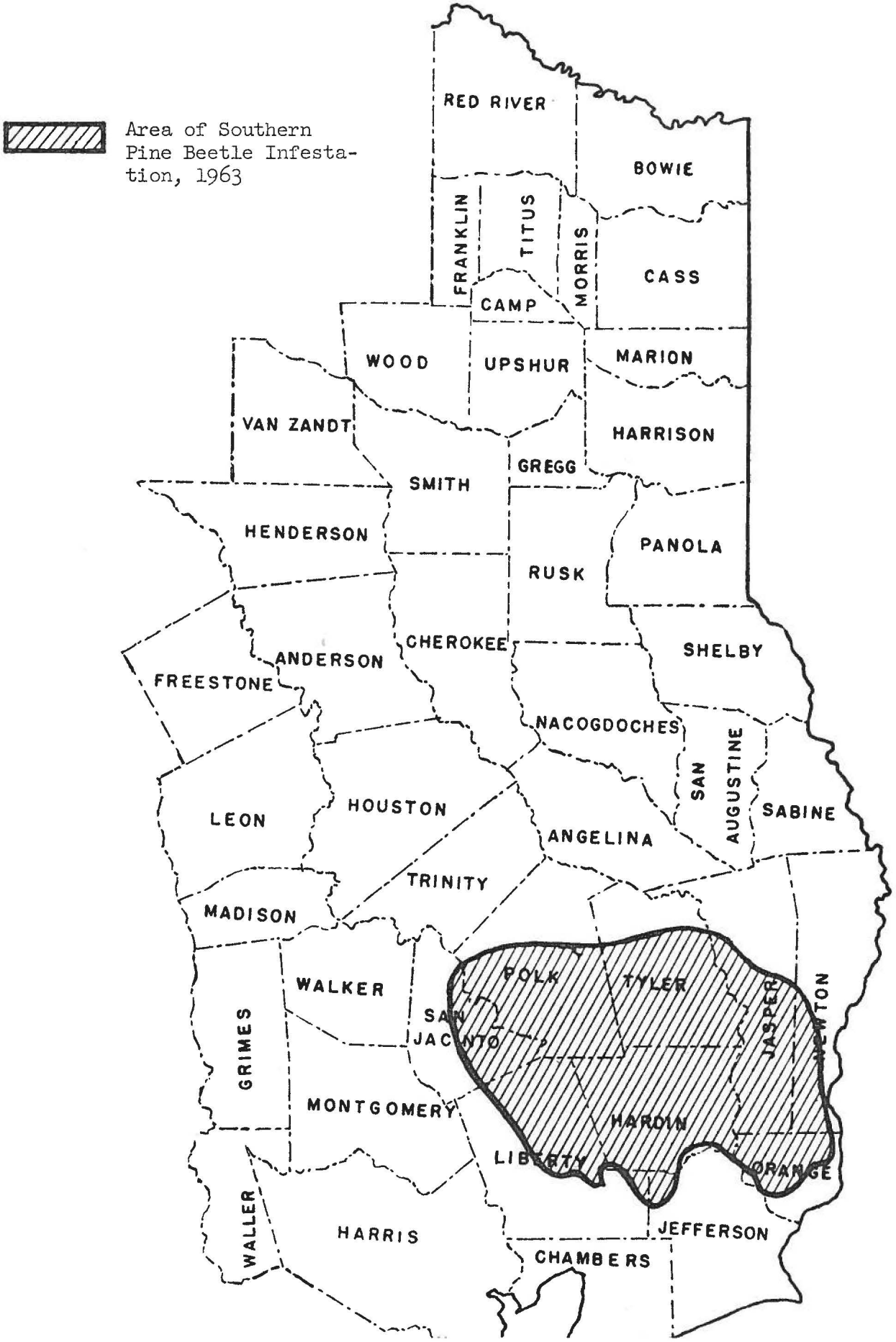
Control Plan effective July 1, 1963

REPORTED EXPENDITURES, SOUTHERN PINE BEETLE CONTROL

January 1, 1963 - December 31, 1963

| NAME | AMOUNT |
|---|---|
| Angelina County Lumber Co. | $ 82.92 |
| W. T. Carter & Bros. | 5,146.12 |
| Champion Papers Inc. | 7,513.41 |
| Ealand Wood Lumber Co. | 100.00 |
| Wirt Davis Estate | 939.89 |
| International Paper Co. | 10,617.49 |
| The Keith Company | 472.97 |
| Kirby Lumber Corporation | 38,269.20 |
| Philip B. Lucas | 120.00 |
| Lutcher & Moore Lumber Co. | 1,416.00 |
| R. A. Mann & R. B. Barclay | 15.90 |
| Marbann Corporation | 763.32 |
| T. J. Moss Tie Co. | 4,960.92 |
| S. D. O'Brien | 404.52 |
| B. E. Quinn & Son | 65.00 |
| P. A. Racki Lumber Co. | 3,061.77 |
| R. I. Reid | 18.73 |
| Southern Neches Corp. | 114.00 |
| Southern Pine Lumber Co. | 2,044.42 |
| Southland Paper Mills, Inc. | 6,448.33 |
| Southwestern Settlement & Development Co. | 11,282.79 |
| Mrs. Joe W. Thomas Estate | 28.40 |
| E. W. Tubb & L. M. Feagin | 173.02 |
| Texas Forest Service | 21,094.48 |
| TOTAL | $ 115,153.60 |

SOUTHERN PINE BEETLE CONTROL AREA--1963



Texas Forest Service

# CONTROL PLAN
for
# SOUTHERN PINE BEETLE INFESTATIONS
EFFECTIVE JULY 1, 1963

Landowners should continue full scale control operations until all known Southern pine beetle infestations are controlled.

Aerial detection flights will be continued by Texas Forest Service and cooperating landowners at regular intervals until control of the epidemic is accomplished.

Evaluations to determine population trends and status of the epidemic will be conducted by TFS and I & DC Branch, U.S.F.S., at regular intervals. Presence of infestations is to be determined by supervisory personnel trained in this technique.

Each spot that has been controlled will be examined later for re-infestations and immediately controlled, if active brood trees are found.

The primary emphasis is on control, not utilization or salvage. Unless each owner recognizes this principle and applies it, the control efforts of other landowners may be futile.

All trees infested with active broods of Southern pine beetle, including single-tree infestation, will be felled. Salvage of dead timber is encouraged by the Texas Forest Service, but it is not a form of control. Utilization of brood trees at all times throughout the entire epidemic is urged. Immediate brood tree utilization is regarded as a form of control, but the parts of the tree not utilized, e.g., tops and stumps, must be sprayed with BHC if infested and all other infested trees in a "spot" of infestations must be felled and sprayed. "Immediate" brood tree utilization is defined as getting the logs to the mill within 48 hours after the infested tree has been felled. Unless the infested logs intended for utilization are removed from the site, they must be sprayed within 48 hours after having been felled.

The objective of the plan is to control all active brood trees throughout the epidemic area immediately. The procedure will be as follows:

a. Landowners will be encouraged to control infestations on their own lands.

b. Until August 23rd, when a landowner is unwilling or unable to conduct control operations, a Texas Forest Service crew will endeavor to get that landowner's permission to conduct the control work. If granted, a Texas Forest Service crew will do the control work gratis on forest ownerships of less than 50 acres. For ownerships over 50 acres, the landowner must agree to reimburse TFS for control before the work will be done.

c. After August 23, when the conditions of the Forest Pest Law become effective, the provision of that law will guide the Texas Forest Service on procedures to be followed with those owners unwilling or unable to conduct control operations. .

No work will be done within corporate limits, but effort will be made to persuade municipalities to do the control work. When all efforts to accomplish control work within corporate limits of a municipality have failed to accomplish the desired results, an appeal may be made to the Director, Texas Forest Service for authorization for Texas Forest Service crews to do the work.

Employees of the Texas Forest Service are available to train control crews, to train in identification of the beetle and to train in mop-up maintenance operations.

Inspections of control work to determine its effectiveness will be done by foresters in the employ of the Texas Forest Service.

All owners will be reimbursed from Federal funds, through PL-110, in the amount of one-third of expenditures for approved control work, when funds are made available for this purpose.

Only expenditures directly related to felling and spraying will be reported on the monthly report Form FM-17, "Report of Southern Pine Beetle Control Expenditures "available from the Texas Forest Service. Expenditures for the removal of brood trees for utilization should be excluded in reports for reimbursement to the Texas Forest Service. The report should be received by the Texas Forest Service by the 15th of the month subsequent to expenditure of control funds.

DY/et

College Station, Texas
July 23, 1963

P-6.3562

Cooperators in Southern Pine Beetle Control Project
sent copy of Observations of the 1963 East Texas
Southern Pine Beetle Epidemic report, by Kenneth Nelson

A. F. Lehman
Angelina County Lumber Co.
Keltys, Texas

Irwin F. Grillot
W. T. Carter & Bro.
Camden, Texas

C. S. Coffman, Jr.
Assistant Regional Manager
Champion Papers Inc.
Huntsville, Texas

Neil Wood
Ealand-Wood Lumber Co.
Jasper, Texas

Charles R. Franklin
Forester
Wirt Davis Estate
Box 694
Livingston, Texas

Felix Dowdy
Regional Manager
International Paper Company
P. O. Box 758
Camden, Arkansas

S. S. Roberts
The Keith Company
P. O. Box 2727
Beaumont, Texas

George W. Stanley
Kirby Lumber Corp.
Houston, Texas

Philip B. Lucas
1313 Petroleum Bldg.
Beaumont, Texas

Raymond Gipson
The Lutcher-Moore Lbr. Co.
Orange, Texas

R. A. Mann & R. B. Barclay
Woodville, Texas

George R. Bouchard
Marbann Corporation
417 Austin
Liberty, Texas

Moss Tie Company
Box 5437
Bossier City, La.

S. D. O'Brien
Lufkin, Texas

Jim Stockman
B. E. Quinn Estate
P. O. Box 1509
Beaumont, Texas

Raymond Racki
P. A. Racki Lumber Co.
Rye, Texas

R. I. Reid
Woodville, Texas

Southern Neches Corp.
Willard Smith
Box 300
Jasper, Texas

W. B. Fulmer
Southern Pine Lumber Co.
Diboll, Texas

Harvey Sprott
Southland Paper Mills, Inc.
Lufkin, Texas

John H. Chessher
Southwestern Settlement & Dev. Co.
Jasper, Texas

L. A. Little
Mrs. Joe W. Thomas Estate
P. O. Box 58
Lufkin, Texas

E. W. Tubb & L. M. Feagin
Woodville, Texas